



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,929	08/18/2003	Kenji Sakai	2281.2.15	3856

21552 7590 05/05/2005

MADSON & METCALF
GATEWAY TOWER WEST
SUITE 900
15 WEST SOUTH TEMPLE
SALT LAKE CITY, UT 84101

EXAMINER

GOUDREAU, GEORGE A

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/642,929

Applicant(s)

SAKAI ET AL.

Examiner

George A. Goudreau

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 11-24 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-4, and 7-10 is/are allowed.
- 6) ☒ Claim(s) 1, 5 and 6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

George A. Goudreau
GEORGE GOUDREAU
PRIMARY EXAMINER

4-051

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Art Unit: 1763

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, and 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Ina et. al. (6,315,803).

Ina et. al. disclose a three step cmp polishing process for forming a Cu damascene with an underlying Ta barrier layer on the surface of a wafer which is comprised of the following steps:

- The bulk of the Cu layer is cmp polished in a first cmp polishing process, which employs a cmp slurry comprised of colloidal silica abrasive particles, H₂O₂, H₂O, and glycine.;

- The remainder of the Cu layer is cmp polished down to the top of the Ta barrier layer in a second cmp polishing process which employs a cmp slurry comprised of abrasive colloidal silica particles, H₂O₂, oxalic acid, BTA, EDTA, and H₂O.;
- and


- The Ta barrier layer is cmp polished down to the surface of the ILD layer in a third cmp polishing process which employs a cmp slurry which is comprised of abrasive colloidal silica particles, oxalic acid, BTA, EDTA, and H₂O with no H₂O₂ being present.

This is discussed specifically in columns 13-16; and discussed in general in columns 1-20.

Art Unit: 1763

3. Claims 2-4, and 7-10 are allowed.
4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
5. Any inquiry concerning this communication should be directed to examiner

George A. Goudreau at telephone number (571)-272-1434.


George A. Goudreau
Primary Examiner
Art Unit 1763